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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

22 DEC 2004

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| Applicant's or agent's file reference P21631WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/GB 03/02850 | International filing date (day/month/year) 03.07.2003 | Priority date (day/month/year) 04.07.2002 |
| International Patent Classification (IPC) or both national classification and IPC F16H59/02 | | |
| Applicant EATON CORPORATION et al. | | |

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| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 5 sheets.</p> |
| <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p> |

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|---|---|
| Date of submission of the demand 02.02.2004 | Date of completion of this report 22.10.2004 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Martinvalet, C-I Telephone No. +49 89 2399-8185  |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/02850**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-3, 6-12 as originally filed
4, 5 received on 05.10.2004 with letter of 04.10.2004

Claims, Numbers

1-24 received on 05.10.2004 with letter of 04.10.2004

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-24 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-24 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-24 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty and inventive step; citations and explanations supporting such statement

Reference is made to the following document:

D1: US-A-4 912 997 (MALCOLM ROBERT G ET AL) 3 April 1990

Independent Claim 1

The present application meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is new in the sense of Article 33(2) PCT.

The document **D1** is regarded as being the most relevant state of the art discloses: a shift lever mechanism comprising a housing, a lever (22), pivoting means (26,28,40) adapted to facilitate pivoting of the lever into a plurality of positions, and lever position indication means (60,74) operable to indicate disposal of the lever in one or more predetermined positions, wherein the pivoting means (26,28,40) comprises a spherical element (26) and the lever position indication means comprises transducer means (140,142) disposed adjacent the spherical element to be co-operable with the actuation means (60,74) such that upon positioning of the lever in each predetermined position, the actuation means actuates the transducer means to indicate to a user disposal of the lever in said each predetermined position.

The subject-matter of claim 1 differs from this known shift lever mechanism in that at least part of the actuation means is disposed on the spherical element.

The problem to be solved by the present invention may be regarded as providing a shift lever mechanism which is compact.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: the prior art documents do not suggest the differencing features.

Dependent claims 2-24

Claims 2-24 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

According the present invention there is provided a shift lever mechanism, comprising a lever, pivoting means, adapted to facilitate pivoting of said lever into a plurality of positions, and lever position indication means, operable to indicate disposal of the lever in one or more predetermined positions, wherein the pivoting means comprises a

5 spherical element and the lever position indication means comprises transducer means, disposed adjacent the spherical element to be co-operable with actuation means, such that, upon positioning of the lever in said each predetermined position, the actuation means actuates the transducer means to indicate, to a user, disposal of the lever in said each predetermined position,

10 characterised in that at least part of the actuation means is disposed on the spherical element

The transducer means may comprise an electrical switch, which may be a potentiometer.

15 Alternatively, the transducer means may comprise an air valve.

The actuation means advantageously comprises a member and a receiver adapted to receive the member therein. The member may be disposed on the transducer means and the receiver may be disposed on the pivoting means.

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The transducer means may be disposed in the housing preferably along an axis extending radially outwards and, more preferably, substantially perpendicular relative to the longitudinal axis of the housing.

25 Advantageously, at least part of the transducer means, preferably the member, is displaceable relative to at least part of the pivoting means, preferably the receiver. The displacement of the part is preferably along an axis extending radially outwards relative to the pivoting means.

A shift lever according to the present invention may also comprise resilient means, operable to provide resistance to disposal of the lever in one or more predetermined positions, characterised in that the resistance is provided by the pivoting means.

- 5 The resilient means may comprise a resilient member and a detent. The detent is preferably disposed on the pivoting means and the member preferably disposed on the housing substantially along an axis extending radially outwards from the pivoting means. The member is preferably displaceable relative to the detent.

- 10 The pivoting means may comprise a spherical element advantageously disposed in a retaining cup and operable to pivotally move therein by sphere-to-sphere engagement therewith.

- The spherical element may be fixed to the lever thereby forming a pivot point on the lever. The spherical element may be fixed to the lever by means of a retaining pin. Alternatively, the spherical element may form an integral part of the lever.

- The lever may extend through the spherical element to form an arrangement substantially coaxial therewith.

- 20 The spherical element is preferably disposed on the lever intermediate first and second ends thereof.

- The spherical element is preferably formed from a plastics material. Alternatively, the spherical element may be formed from a metallic material.

- 25 The retaining cup may be formed from a plastics material. Alternatively, the retaining cup may be formed from a metallic material.

- 30 The retaining cup may be disposed in the housing and may be formed from more than one part.

CLAIMS

- 5 1. A shift lever mechanism, comprising a lever, pivoting means, adapted to facilitate pivoting of said lever into a plurality of positions, and lever position indication means, operable to indicate disposal of the lever in one or more predetermined positions, wherein the pivoting means comprises a spherical element and the lever position indication means comprises transducer means, disposed adjacent the spherical element to be co-operable with actuation means, such that, upon positioning
10 of the lever in said each predetermined position, the actuation means actuates the transducer means to indicate, to a user, disposal of the lever in said each predetermined position, characterised in that at least part of the actuation means is disposed on the spherical element.
- 15 2. A shift lever mechanism as claimed in Claim 1, wherein the transducer means comprises a switch.
- 20 3. A shift lever mechanism as claimed in Claim 2, wherein the switch comprises a potentiometer.
4. A shift lever mechanism as claimed in Claim 1, wherein the transducer means comprises an air valve.
- 25 5. A shift lever mechanism as claimed in any of the preceding claims, wherein the actuation means comprises a member and a receiver, adapted to receive the member therein.
- 30 6. A shift lever mechanism as claimed in Claim 5, wherein the member is disposed on the transducer means and the receiver is disposed on the pivoting means.

7. A shift lever mechanism as claimed in any of the preceding claims, comprising a housing and wherein the transducer means is disposed in the housing.
- 5 . 8. A shift lever mechanism as claimed in Claim 7, wherein the transducer means is disposed along an axis extending radially outwards relative to the longitudinal axis of the housing.
9. A shift lever mechanism as claimed in any of the preceding claims, wherein at least
10 part of the transducer means is displaceable relative to at least part of the pivoting means.
10. A shift lever mechanism as claimed in Claims 5 to 9, wherein the member is
15 displaceable relative to the receiver.
11. A shift lever mechanism as claimed in Claims 9 and 10, wherein the displacement is substantially along an axis extending radially outwards relative to the pivoting means.
12. A shift lever mechanism as claimed in any of the preceding claims comprising
20 resilient means, operable to provide resistance to displacement of the lever into one or more predetermined positions, wherein the resistance is provided by the pivoting means.
13. A shift lever mechanism as claimed in Claim 12, wherein the resilient means
25 comprises a resilient member and a detent.
14. A shift lever mechanism as claimed in Claim 13, wherein the detent is disposed on the pivoting means.
- 30 15. A shift lever mechanism as claimed in Claims 13 and 14, wherein the resilient member is disposed on the housing.

16. A shift lever mechanism as claimed in Claim 15, wherein the resilient member is disposed substantially along an axis extending radially outwards from the pivoting means.

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17. A shift lever mechanism as claimed in Claims 13 to 16, wherein the resilient member is displaceable relative to the detent.

18. A shift lever mechanism as claimed in any of the preceding claims, wherein the spherical element is disposed in a retaining cup and is operable to pivotally move therein.

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19. A shift lever mechanism as claimed in Claim 18, wherein at least one of the spherical element and cup is formed from a plastics material.

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20. A shift lever mechanism as claimed in Claim 18, wherein at least one of the spherical element and cup is formed from a metallic material.

21. A shift lever mechanism as claimed in any of the preceding claims, wherein the spherical element is fixed to the lever thereby forming a pivot point on the lever.

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22. A shift lever mechanism as claimed in Claim 21, wherein the spherical element is fixed to the lever by means of a retaining pin.

23. A shift gear mechanism as claimed in Claims 1 to 20, wherein the spherical element forms an integral part of the lever thereby forming a pivot point on the lever.

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24. A shift lever mechanism as claimed in any of the preceding claims, wherein the lever extends through the spherical element to form an arrangement substantially coaxial therewith.

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